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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.: R13-3048
Plant ID No.: 009-00116
Applicant: Appalachia Midstream Services, LLC (AMS)
Facility Name: Buffalo Compression Facility
Location: Bethany, Brooke County
NAICS Code: 211111 (Natural Gas Extraction)
Application Type: Construction
Received Date: February 13, 2013
Engineer Assigned: Jerry Williams, P.E.
Fee Amount: \$2,000.00
Date Received: February 13, 2013
Complete Date: May 13, 2013
Due Date: August 11, 2013
Applicant Ad Date: February 15, 2013
Newspaper: *Wheeling Intelligencer*
UTM's: Easting: 540.686 km Northing: 4,449.522 km Zone: 17
Description: Proposal to construct and operate a natural gas compressor facility with twelve (12) natural gas fired reciprocating internal combustion engines, one (1) microturbine generator, one (1) natural gas generator, three (3) tri-ethylene glycol (TEG) dehydration unit with associated reboilers, two (2) heater treater burners, eight (8) condensate storage tanks, two (2) produced water storage tanks, condensate and produced water truck loading, and related fugitive emissions.

DESCRIPTION OF PROCESS

The following process description was taken from Permit Application R13-3048:

The natural gas inlet stream from surrounding area wells enters the facility at low pressure through a two-phase pressure inlet separator that will gravity separate the inlet stream into two (2) streams: gas and hydrocarbon/water liquids. Low-pressure inlet gas will be compressed via three-stage reciprocating compressors with interstage cooling. Discharge from the compressors will pass through filter/coalescor separators to remove any condensed or entrained liquids present. After the inlet gas passes through compressors, it goes through the

dehydration process before exiting the facility via a sales pipeline. A portion of the discharge gas will be removed prior to outlet metering for use as fuel gas.

Triethylene glycol (TEG) dehydration units are used to remove water from the gas. The units are comprised of both a glycol contactor skid and glycol regeneration skid. In the dehydration process, gas passes through a contactor vessel where water is absorbed by the glycol. The “rich” glycol containing water goes to the glycol reboiler where heat is used to remove the water and regenerate the glycol. The heat is supplied by a natural gas-fired reboiler that exhausts to the atmosphere. Overhead still column emissions from the glycol regeneration skid will be controlled by an air-cooled condenser. The non-condensables from the still column overheads will be routed to the reboiler and burned with 95% destruction efficiency. Flash tank off-gases from the glycol regeneration skid will also be routed to the inlet to be recycled and recompressed for 100% capture and control efficiency. The TEG reboilers are equipped with a burner management system to ensure a constant flame for combustion of the vapors.

After dehydration, fuel gas is pulled from the discharge side of the process. A fuel gas skid reduces the pressure of a portion of the discharge gas to a pressure suitable for use by fuel-burning equipment. Pertaining to the fuel gas skid, there is no hydrocarbon liquid recovery by design.

Inlet liquids will flow from the two-phase low-pressure inlet separator to a heater treater feed drum, a three-phase low pressure separator. Heavy liquids (water) will be separated and sent to atmospheric produced water storage tanks. Produced water will be transported off site via truck. Liquid hydrocarbons (condensate) will flow from the feed drum to the heater treater. Any vapors evolved from the liquid to the feed drum will be routed to the electric driven flash gas compressor and recycled to the two-phase low pressure inlet separator. After stabilization, condensate will be sent to atmospheric condensate storage tanks. Produced condensate will be transported off site via truck. Vapors evolved from truck loading (both produced water and condensate) will be captured and routed to an activated carbon canister with at least 70% capture and 95% control efficiency, for an overall efficiency of 66.5%.

The facility will contain several liquid recycle streams to reduce emissions. All high pressure liquids will be cascaded to lower pressure separators to capture gases evolved as a result of pressure reduction. All liquids formed by gas cooling in the inter-stage coolers of the three-stage reciprocating compressors will be cascaded to lower pressure scrubbers on the compressor skid.

The facility will also contain several gas recycle streams. All atmospheric tank emissions will be controlled by vapor recovery compression. The vapor recovery compressors will discharge in the flash gas compressor. The flash gas compressor will compress these gases and discharge into the two-phase low pressure inlet separator. Overhead gases from the heater treater feed drum and heater treater will also be routed to the flash gas compressor and recycled to the two-phase low pressure inlet separator.

The generators provide electric power to the vapor recovery and flash gas compressors, electric glycol pumps, and other electrical equipment. Fugitive emissions from component leaks will also occur.

The compressor station will have two (2) primary suction pressure operating points, 125 psig and 50 psig. The expected discharge pressure range is 900-1,250 psig. The facility will initially operate at 125 psig suction pressure and will continue to do so until such time that field production volumes decline. At that time, the suction pressure will be lowered to 50 psig, resulting in diminished facility capacity.

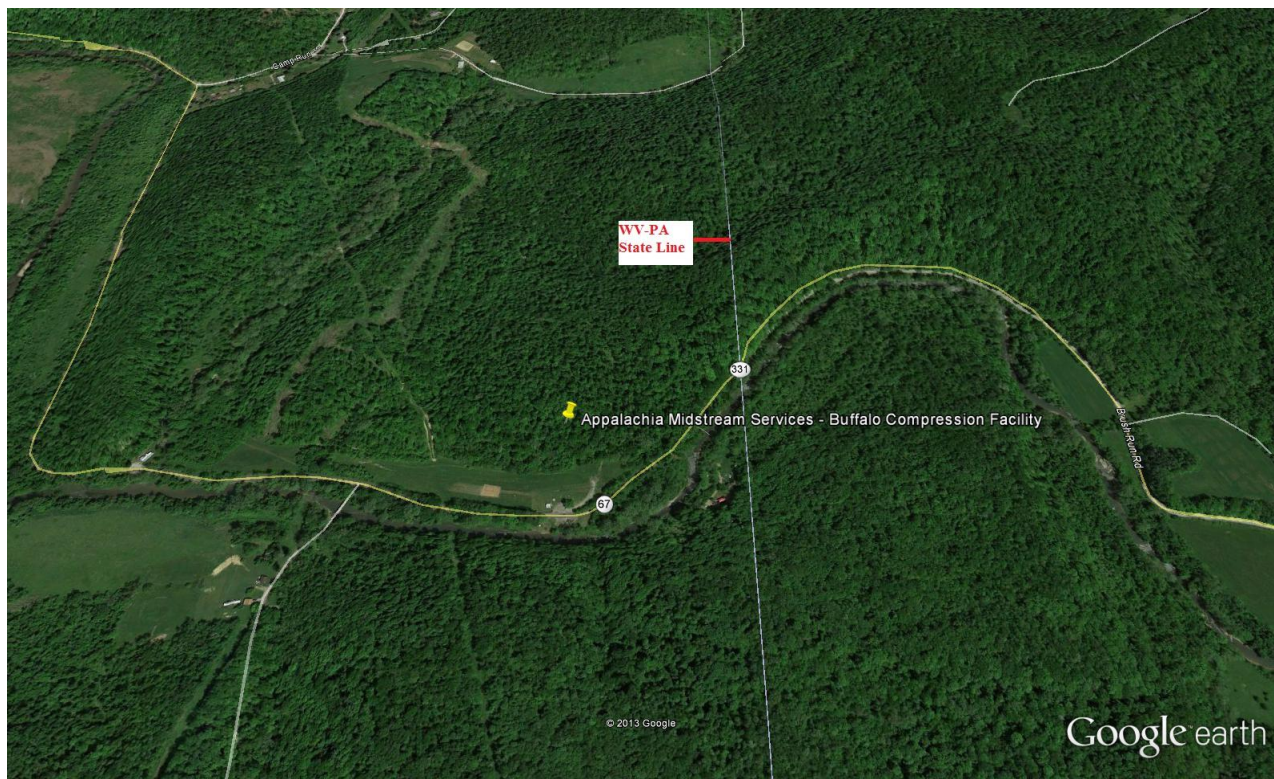
SITE INSPECTION

A site inspection was conducted on February 25, 2013 by Steve Sobutka of the Division of Air Quality (DAQ) Northern Panhandle Regional Office (NPRO). The site location is in a remote area. There is an access road that is approximately 0.2 miles long that winds up a small hill where the facility will be located. There are no immediate houses in close proximity. The closest residence appears to be approximately 1,000 feet from the entrance to the access road of State Route 67 (Bethany Pike). The site is located approximately 1/10 mile from the West Virginia – Pennsylvania state line. The site is acceptable.

Latitude: 40.195106
Longitude: -80.521997

Directions as given in the permit application are as follows:

Heading south on Rt. 79 toward Washington, PA, take exit 38 to merge onto I-70 toward Wheeling and proceed for 16.5 miles. Take the Old Brick Road exit and turn right onto Old Brick Road. Continue onto Maple Ave. After 0.1 mile, turn left onto Main Street, then after 0.1 mile turn right on N. Liberty Road. Take the third right onto Dry Ridge/State Route 3003 and proceed 3.9 miles. Turn left to stay on Dry Ridge/State Route 3003 and continue to follow for 2.0 miles. Turn left onto PA-331/Brush Run Road. After 1.4 miles continue onto WV 67 W/Bethany Pike and proceed for 0.1 mile to the facility on the right.



ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Emissions associated with this construction application consist of the combustion emissions from five (5) natural gas fired compressor engines (1E-5E), two (2) natural gas fired generators (6E-7E), one (1) TEG dehydrator still vent (8E), one (1) TEG dehydrator flash tank (9E), one TEG dehydrator reboiler (10E), five (5) 400 bbl tanks (settling, condensate, produced water) (11E-15E), one (1) product loadout rack (16E), and fugitive emissions. Fugitive emissions for the facility are based on calculation methodologies presented in EPA Protocol for Equipment Leak Emission Estimates. The following table indicates which methodology was used in the emissions determination:

Emission Point ID#	Process Equipment	Calculation Methodology
EPCE-1 – EPCE-12	12 - 1,380 horsepower (hp) Caterpillar G3516B Reciprocating Internal Combustion Engine (RICE) w/ Oxidation Catalyst	Manufacturer's Data, EPA AP-42 Emission Factors
EPGEN-1	805 hp CapAMS C600 Microturbine Generator	Manufacturer's Data, EPA AP-42 Emission Factors
EPGEN-2	605 hp Baldor Natural Gas Generator w/ Non Selective Catalytic Reduction (NSCR)	Manufacturer's Data, EPA AP-42 Emission Factors
EPSTL-1 – EPSTL-3	3 - 55 million standard cubic feet per day (mmscfd) TEG Dehydrator Still Vent w/ Condenser	GRI-GlyCalc 4.0
EPRBL-1 – EPRBL3	3 - 1.0 million British Thermal Units per hour (MMBtu/hr) TEG Dehydrator Reboiler	EPA AP-42 Emission Factors
EPHT-1 – EPHT-2	2 – 0.5 MMBtu/hr Heater Treater Burners	EPA AP-42 Emission Factors
EPTK-1 – EPTK8	8 – 400 bbl (barrel) Condensate Storage Tanks with Vapor Recovery Unit	EPA Tanks 4.09d and ProMax 3.2 (Flashing)
EPWTK-1 – EPWTK-2	2 – 400 bbl Produced Water Storage Tanks with Vapor Recovery Unit	EPA Tanks 4.09d and ProMax 3.2 (Flashing)
EPLOAD-1	Condensate Truck Loading with Carbon Canister	EPA AP-42 Emission Factors
EPLOAD-2	Produced Water Truck Loading with Carbon Canister	EPA AP-42 Emission Factors

The following table indicates the control device efficiencies that are required for this facility:

Emission Unit	Pollutant	Control Device
1,380 hp Caterpillar G3516B RICE w/ Oxidation Catalyst (EPCE-1 – EPCE-12)	Carbon Monoxide	Oxidation Catalyst
	Volatile Organic Compounds	
	Formaldehyde	
605 hp Baldor Generator w/ NSCR(EPGEN-2)	Carbon Monoxide	NSCR
	Volatile Organic Compounds	
	Formaldehyde	
55 mmscfd TEG Dehydrator Still Vent (EPSTL-1 – EPSTL-3)	Volatile Organic Compounds	Condensers, Recycled to Flame Zone of Reboilers
	Hazardous Air Pollutants	
Storage Tanks (EPTK-1 – EPTK-8, EPWTK-1 – EPWTK-2)	Volatile Organic Compounds	Vapor Recovery Unit
	Hazardous Air Pollutants	
Loadout Racks (EPLOAD-1, EPLOAD-2)	Volatile Organic Compounds	Carbon Canister
	Hazardous Air Pollutants	

The total facility PTE for the Buffalo Compression Facility is shown in the following table:

Pollutant	Facility Wide PTE (tons/year)
Nitrogen Oxides	94.73
Carbon Monoxide	91.46
Volatile Organic Compounds	95.34
Particulate Matter	6.44
Sulfur Dioxide	0.47
Formaldehyde	8.27
Total HAPs	22.23
Carbon Dioxide Equivalent	94,201

Maximum detailed controlled point source emissions were calculated by AMS and checked for accuracy by the writer and are summarized in the table on the next page.

Appalachia Midstream Services, LLC – Buffalo Compression Facility (R13-3048)

Emission	Source	NO _x		CO		VOC		PM		SO ₂		Formaldehyde		Total HAPs		CO ₂ e	
Point ID#		lb/hr	ton/year	lb/hr	ton/year	lb/hr	ton/year	lb/hr	ton/year	lb/hr	ton/year	lb/hr	ton/year	lb/hr	ton/year	lb/hr	ton/year
EPCE-1	1,380 hp CAT G3516B	1.52	6.66	1.56	6.82	0.84	3.69	0.11	0.49	0.01	0.03	0.15	0.67	0.36	1.56	1620	7095
EPCE-2	1,380 hp CAT G3516B	1.52	6.66	1.56	6.82	0.84	3.69	0.11	0.49	0.01	0.03	0.15	0.67	0.36	1.56	1620	7095
EPCE-3	1,380 hp CAT G3516B	1.52	6.66	1.56	6.82	0.84	3.69	0.11	0.49	0.01	0.03	0.15	0.67	0.36	1.56	1620	7095
EPCE-4	1,380 hp CAT G3516B	1.52	6.66	1.56	6.82	0.84	3.69	0.11	0.49	0.01	0.03	0.15	0.67	0.36	1.56	1620	7095
EPCE-5	1,380 hp CAT G3516B	1.52	6.66	1.56	6.82	0.84	3.69	0.11	0.49	0.01	0.03	0.15	0.67	0.36	1.56	1620	7095
EPCE-6	1,380 hp CAT G3516B	1.52	6.66	1.56	6.82	0.84	3.69	0.11	0.49	0.01	0.03	0.15	0.67	0.36	1.56	1620	7095
EPCE-7	1,380 hp CAT G3516B	1.52	6.66	1.56	6.82	0.84	3.69	0.11	0.49	0.01	0.03	0.15	0.67	0.36	1.56	1620	7095
EPCE-8	1,380 hp CAT G3516B	1.52	6.66	1.56	6.82	0.84	3.69	0.11	0.49	0.01	0.03	0.15	0.67	0.36	1.56	1620	7095
EPCE-9	1,380 hp CAT G3516B	1.52	6.66	1.56	6.82	0.84	3.69	0.11	0.49	0.01	0.03	0.15	0.67	0.36	1.56	1620	7095
EPCE-10	1,380 hp CAT G3516B	1.52	6.66	1.56	6.82	0.84	3.69	0.11	0.49	0.01	0.03	0.15	0.67	0.36	1.56	1620	7095
EPCE-11	1,380 hp CAT G3516B	1.52	6.66	1.56	6.82	0.84	3.69	0.11	0.49	0.01	0.03	0.15	0.67	0.36	1.56	1620	7095
EPCE-12	1,380 hp CAT G3516B	1.52	6.66	1.56	6.82	0.84	3.69	0.11	0.49	0.01	0.03	0.15	0.67	0.36	1.56	1620	7095
EPGEN-1	805 hp Microturbine	2.41	10.55	0.62	2.7	0.02	0.07	0.05	0.22	0.03	0.11	0.01	0.02	0.01	0.03	880	3856
EPGEN-2	605 hp Generator	1.33	2.92	2.67	5.84	0.93	2.04	0.11	0.24	0.01	0.01	0.12	0.25	0.16	0.35	662	1450
EPSTL-1	55 mmscf TEG Still Vent	0	0	0	0	1.07	4.68	0	0	0	0	0	0	0.12	0.55	1	3
EPSTL-2	55 mmscf TEG Still Vent	0	0	0	0	1.07	4.68	0	0	0	0	0	0	0.12	0.55	1	3
EPSTL-3	55 mmscf TEG Still Vent	0	0	0	0	1.07	4.68	0	0	0	0	0	0	0.12	0.55	1	3
EPRBL-1	1.0 MMBTU/hr Reboiler	0.07	0.33	0.06	0.28	0.01	0.02	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	117	512
EPRBL-2	1.0 MMBTU/hr Reboiler	0.07	0.33	0.06	0.28	0.01	0.02	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	117	512
EPRBL-3	1.0 MMBTU/hr Reboiler	0.07	0.33	0.06	0.28	0.01	0.02	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	117	512
EPHT-1	0.5 MMBTU/hr Htr. Trtr.	0.04	0.16	0.03	0.14	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	59	256
EPHT-2	0.5 MMBTU/hr Htr. Trtr.	0.04	0.16	0.03	0.14	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	59	256
EPTK-1-8	8-400 bbl Cond. Tanks	0	0	0	0	0.12	0.54	0	0	0	0	0	0	0.01	0.04	106	465
EPWTK-1-2	2-400 bbl Prod H2O	0	0	0	0	0.01	0.01	0	0	0	0	0	0	0.01	0.01	49	214

	Tanks																
EPLOAD-1	Cond. Truck Loading	0	0	0	0	NA	10.98	0	0	0	0	0	0	NA	0.87	NA	49
EPLOAD-2	Prod H2O Truck Loading	0	0	0	0	NA	0.05	0	0	0	0	0	0	NA	0.01	NA	23
Fugitive	Fugitive Emissions	0	0	0	0	NA	12.87	0	0	0	0	0	0	NA	0.33	NA	499
Blowdowns	Blowdown Emissions	0	0	0	0	NA	10.44	0	0	0	0	0	0	NA	0.2	NA	448
Total	Total Facility PTE	22.29	94.73	22.21	91.46	14.39	95.34	1.53	6.44	0.11	0.47	1.95	8.27	4.82	22.23	21606	94201

REGULATORY APPLICABILITY

Unless otherwise stated WVDEP DAQ did not determine whether the permittee is subject to an area source air toxics standard requiring Generally Achievable Control Technology (GACT) promulgated after January 1, 2007 pursuant to 40 CFR 63, including the area source air toxics provisions of 40 CFR 63, Subparts ZZZZ and HH.

The following rules apply to the facility:

45CSR2 (Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers)

The purpose of 45CSR2 (Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers) is to establish emission limitations for smoke and particulate matter which are discharged from fuel burning units.

45CSR2 states that any fuel burning unit that has a heat input under ten (10) million B.T.U.'s per hour is exempt from sections 4 (weight emission standard), 5 (control of fugitive particulate matter), 6 (registration), 8 (testing, monitoring, recordkeeping, reporting) and 9 (startups, shutdowns, malfunctions). However, failure to attain acceptable air quality in parts of some urban areas may require the mandatory control of these sources at a later date.

The heat input of all of the proposed fuel burning units (EPRBL-1 – EPRBL-3, EPHT-1, EPHT-2) are below 10 MMBTU/hr. Therefore, these units are exempt from the aforementioned sections of 45CSR2. However, AMS would be subject to the opacity requirements in 45CSR2, which is 10% opacity based on a six minute block average.

45CSR10 (To Prevent and Control Air Pollution from the Emissions of Sulfur Oxides)

45CSR10 states that any fuel burning unit that has a heat input under ten (10) million B.T.U.'s per hour is exempt from sections 3 (weight emission standard), 6 (registration), 7 (permits), and 8 (testing, monitoring, recordkeeping, reporting). However, failure to attain acceptable air quality in parts of some urban areas may require the mandatory control of these sources at a later date.

The heat input of all of the proposed fuel burning units (EPRBL-1 – EPRBL-3, EPHT-1, EPHT-2) are below 10 MMBTU/hr. Therefore, these units are exempt from the aforementioned sections of 45CSR10.

45CSR13 (Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Administrative Updates, Temporary Permits, General Permits, and Procedures for Evaluation)

45CSR13 applies to this source due to the fact that AMS exceeds the regulatory emission threshold for criteria pollutants of 6 lb/hr and 10 ton/year, and they are also subject to a substantive requirement of an emission control rule promulgated by the Secretary (40CFR60 Subparts JJJJ and OOOO).

AMS paid the appropriate application fee and published the required legal advertisement for a construction permit application.

45CSR16 (Standards of Performance for New Stationary Sources Pursuant to 40 CFR Part 60)

45CSR16 applies to this source by reference of 40CFR60, Subparts JJJJ and OOOO. These requirements are discussed under that rule below.

45CSR22 (Air Quality Management Fee Program)

AMS is not subject to 45CSR30. The Buffalo Compression Facility is subject to 40CFR60 Subparts JJJJ and OOOO, however they are exempt from the obligation to obtain a permit under 40 CFR part 70 or 40 CFR part 71, provided they are not required to obtain a permit for a reason other than their status as an area source.

AMS is required to pay the appropriate annual fees and keep their Certificate to Operate current.

40CFR60 Subpart JJJJ (Standards of Performance for Stationary Spark Ignition Internal Combustion Engines (SI ICE))

AMS's compressor engines are subject to 40CFR60 Subpart JJJJ, which sets forth emission limits, fuel requirements, installation requirements, and monitoring requirements based on the year of installation of the subject internal combustion engine. 40CFR60 Subpart JJJJ is applicable to owners and operators of new stationary spark ignition internal combustion engines manufactured after July 1, 2007, for engines with a maximum rated power capacity greater than 500 hp.

The twelve (12) new proposed 1,380 hp engines (EPCE-1 – EPCE-12) will be subject to this rule. The emission limits for these lean burn engines that were manufactured after July 1, 2010 are the following: NO_x – 1.0 g/hp-hr (3.04 lb/hr); CO – 2.0 g/hp-hr (6.08 lb/hr); and VOC – 0.7 g/hp-hr (2.13 lb/hr). Based on the manufacturer's specifications for these engines, the emission standards will be met.

The proposed 605 hp generator (EPGEN-2) will also be subject to this rule. The emission limits for this engine that were manufactured after July 1, 2010 are the following: NO_x – 1.0 g/hp-hr (1.33 lb/hr); CO – 2.0 g/hp-hr (2.67 lb/hr); and VOC – 0.7 g/hp-hr (0.93 lb/hr). Based on the manufacturer's specifications for these engines, the emission standards will be met.

Because these engines will not be certified by the manufacturer, AMS will be required to perform an initial performance test within 180 days from startup, and subsequent testing every 8,760 hours or 3 years, whichever comes first.

40CFR60 Subpart OOOO (Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution)

EPA published in the Federal Register new source performance standards (NSPS) and air toxics rules for the oil and gas sector on August 16, 2012. 40CFR60 Subpart OOOO establishes emission standards and compliance schedules for the control of volatile organic compounds (VOC) and sulfur dioxide (SO₂) emissions from affected facilities that commence construction, modification or reconstruction after August 23, 2011. The following affected sources which commence construction, modification or reconstruction after August 23, 2011 are subject to the applicable provisions of this subpart:

- a. Each gas well affected facility, which is a single natural gas well.

There are no gas wells at this facility. Therefore, all requirements regarding gas well affected facilities under 40 CFR 60 Subpart OOOO would not apply.

- b. Each centrifugal compressor affected facility, which is a single centrifugal compressor using wet seals that is located between the wellhead and the point of custody transfer to the natural gas transmission and storage segment. For the purposes of this subpart, your centrifugal compressor is considered to have commenced construction on the date the compressor is installed (excluding relocation) at the facility. A centrifugal compressor located at a well site, or an adjacent well site and servicing more than one well site, is not an affected facility under this subpart.

There are no centrifugal compressors at the Buffalo Compression Facility. Therefore, all requirements regarding centrifugal compressors under 40 CFR 60 Subpart OOOO would not apply.

- c. Each reciprocating compressor affected facility, which is a single reciprocating compressor located between the wellhead and the point of custody transfer to the natural gas transmission and storage segment. For the purposes of this subpart, your reciprocating compressor is considered to have commenced construction on the date the compressor is installed (excluding relocation) at the facility. A reciprocating compressor located at a well site, or an adjacent well site and servicing more than one well site, is not an affected facility under this subpart.

There are reciprocating internal combustion engines located at the Buffalo Compression Facility that were constructed after August 23, 2011. Therefore, the requirements regarding reciprocating compressors under 40 CFR 60 Subpart OOOO would apply. AMS would be required to perform the following:

- Replace the reciprocating compressor rod packing at least every 26,000 hours of operation or 36 months.
- Demonstrate initial compliance by continuously monitoring the number of hours of operation or track the number of months since the last rod packing replacement.

- Submit the appropriate start up notifications.
- Submit the initial annual report for the reciprocating compressors.
- Maintain records of hours of operation since last rod packing replacement, records of the date and time of each rod packing replacement, and records of deviations in cases where the reciprocating compressor was not operated in compliance.

d. Pneumatic Controllers

- Each pneumatic controller affected facility, which is a single continuous bleed natural gas-driven pneumatic controller operating at a natural gas bleed rate greater than 6 scfh which commenced construction after August 23, 2011, and is located between the wellhead and the point of custody transfer to the natural gas transmission and storage segment and not located at a natural gas processing plant.
- Each pneumatic controller affected facility, which is a single continuous bleed natural gas-driven pneumatic controller which commenced construction after August 23, 2011, and is located at a natural gas processing plant.

There will be applicable pneumatic controllers at this facility. Therefore, the requirements regarding pneumatic controllers under 40 CFR 60 Subpart OOOO would apply. AMS would be required to perform the following:

- *Each pneumatic controller located between the wellhead and a natural gas processing plant must have a bleed rate less than or equal to 6 standard cubic feet per hour (scfh).*
- *Each pneumatic controller must be tagged with the month and year of installation, reconstruction, or modification, and identification information that allows traceability to the records for that controller.*
- *Submit the appropriate start up notifications.*
- *Submit the applicable annual reports for pneumatic controllers.*
- *Maintain records of the date, location and manufacturer specifications for each pneumatic controller, records of the demonstration that the used of pneumatic controllers with a natural gas bleed rate greater than 6 scfh are required and the reasons why, records of the manufacturer's specifications indicating that the controller is designed such that the natural gas bleed rate is less than or equal to 6 scfh, records of deviations in cases where the pneumatic controllers was not operated in compliance.*

- e. Each storage vessel affected facility, which is a single storage vessel, located in the oil and natural gas production segment, natural gas processing segment or natural gas transmission and storage segment.

40CFR60 Subpart OOOO defines a storage vessel as a unit that is constructed primarily of nonearthen materials (such as wood, concrete, steel, fiberglass, or plastic) which provides structural support and is designed to contain an accumulation of liquids or other materials. The following are not considered storage vessels:

- Vessels that are skid-mounted or permanently attached to something that is mobile (such as trucks, railcars, barges or ships), and are intended to be located at a site for less than 180 consecutive days. If the source does not keep or are not able to produce records, as required by §60.5420(c)(5)(iv), showing that the vessel has been located at a site for less than 180 consecutive days, the vessel described herein is considered to be a storage vessel since the original vessel was first located at the site.
- Process vessels such as surge control vessels, bottoms receivers or knockout vessels.
- Pressure vessels designed to operate in excess of 204.9 kilopascals and without emissions to the atmosphere.

This rule requires that the permittee determine the VOC emission rate for each storage vessel affected facility utilizing a generally accepted model or calculation methodology within 30 days of startup, and minimize emissions to the extent practicable during the 30 day period using good engineering practices. For each storage vessel affected facility that emits more than 6 tpy of VOC, the permittee must reduce VOC emissions by 95% or greater within 60 days of startup. The compliance date for applicable storage vessels is October 15, 2013.

The storage vessels located at the Buffalo Compression Facility will be controlled by a vapor recovery unit which will reduce the potential to emit to less than 6 tpy of VOC. Therefore, AMS is not required by this section to reduce VOC emissions by 95%.

- f. The group of all equipment, except compressors, within a process unit is an affected facility.
- Addition or replacement of equipment for the purpose of process improvement that is accomplished without a capital expenditure shall not by itself be considered a modification under this subpart.
 - Equipment associated with a compressor station, dehydration unit, sweetening unit, underground storage vessel, field gas gathering system, or liquefied natural gas unit is covered by §§60.5400, 60.5401, 60.5402, 60.5421 and 60.5422 of this subpart if it is located at an onshore natural

gas processing plant. Equipment not located at the onshore natural gas processing plant site is exempt from the provisions of §§60.5400, 60.5401, 60.5402, 60.5421 and 60.5422 of this subpart.

- The equipment within a process unit of an affected facility located at onshore natural gas processing plants and described in paragraph (f) of this section are exempt from this subpart if they are subject to and controlled according to subparts VVa, GGG or GGGa of this part.

The Buffalo Compression Facility is not a natural gas processing plant. Therefore, Leak Detection and Repair (LDAR) requirements for onshore natural gas processing plants would not apply.

- g. Sweetening units located at onshore natural gas processing plants that process natural gas produced from either onshore or offshore wells.
- Each sweetening unit that processes natural gas is an affected facility; and
 - Each sweetening unit that processes natural gas followed by a sulfur recovery unit is an affected facility.
 - Facilities that have a design capacity less than 2 long tons per day (LT/D) of hydrogen sulfide (H₂S) in the acid gas (expressed as sulfur) are required to comply with recordkeeping and reporting requirements specified in §60.5423(c) but are not required to comply with §§60.5405 through 60.5407 and paragraphs 60.5410(g) and 60.5415(g) of this subpart.
 - Sweetening facilities producing acid gas that is completely reinjected into oil-or-gas-bearing geologic strata or that is otherwise not released to the atmosphere are not subject to §§60.5405 through 60.5407, 60.5410(g), 60.5415(g), and 60.5423 of this subpart.

There are no sweetening units at the Buffalo Compression Facility. Therefore, all requirements regarding sweetening units under 40 CFR 60 Subpart OOOO would not apply.

The following rules do not apply to the facility:

45CSR30 (Requirements for Operating Permits)

AMS is not subject to 45CSR30. The Buffalo Compression Facility is subject to 40CFR60 Subparts JJJJ and OOOO, however they are exempt from the obligation to obtain a permit under 40 CFR part 70 or 40 CFR part 71, provided they are not required to obtain a permit for a reason other than their status as an area source.

40CFR60 Subpart Kb (Standards of Performance for VOC Liquid Storage Vessels)

40CFR60 Subpart Kb does not apply to storage vessels with a capacity less than 75 cubic meters. The largest tanks that AMS has proposed to install are 63.55 cubic meters each. Therefore, AMS would not be subject to this rule.

40CFR60 Subpart KKK (Standards of Performance for Equipment Leaks of VOC from Onshore Natural Gas Processing Plants)

40CFR60 Subpart KKK applies to onshore natural gas processing plants that commenced construction after January 20, 1984, and on or Before August 23, 2011. The Buffalo Compression Facility is not a natural gas processing facility, therefore, AMS is not subject to this rule.

45CSR14 (Permits for Construction and Major Modification of Major Stationary Sources of Air Pollutants)

45CSR19 (Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution which Cause or Contribute to Nonattainment)

The Buffalo Compression Facility is located in Brooke County, which is a non-attainment county for Particulate Matter 2.5. Because Brooke County is a non-attainment county, 45CSR19 possibly applies to this facility.

As shown in the table below, AMS is not subject to 45CSR14 or 45CSR19 review.

Pollutant	PSD (45CSR14) Threshold (tpy)	NANSR (45CSR19) Threshold (tpy)	Buffalo PTE (tpy)	45CSR14 or 45CSR19 Review Required?
Carbon Monoxide	250	NA	91.46	No
Nitrogen Oxides	250	100	94.73	No
Sulfur Dioxide	250	100	0.47	No
Particulate Matter 2.5	250	100	6.44	No
Ozone (VOC)	250	NA	95.34	No
Greenhouse Gas (CO ₂ e)	100,000	NA	94,201	No

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

There will be small amounts of various non-criteria regulated pollutants emitted from the combustion of natural gas. However, due to the concentrations emitted, detailed toxicological information is not included in this evaluation.

AIR QUALITY IMPACT ANALYSIS

Modeling was not required of this source due to the fact that the facility is not subject to 45CSR14 (Permits for Construction and Major Modification of Major Stationary Sources of Air Pollutants) as seen in the table listed in the Regulatory Discussion Section.

SOURCE AGGREGATION

“Building, structure, facility, or installation” is defined as all the pollutant emitting activities which belong to the same industrial grouping, are located on one or more contiguous and adjacent properties, and are under the control of the same person.

The Buffalo Compression Facility is located in Brooke County and will be operated by AMS.

1. The Buffalo Compression Facility will operate under SIC code 1311 (Natural Gas Distribution). There are other compressor stations operated by AMS that share the same two-digit major SIC code of 13 for oil and gas exploration and production. Therefore, the Buffalo Compression Facility does share the same SIC code as other AMS compressor stations.
2. “Contiguous or Adjacent” determinations are made on a case by case basis. These determinations are proximity based, and it is important to focus on this and whether or not it meets the common sense notion of a plant. The terms “contiguous” or “adjacent” are not defined by USEPA. Contiguous has a dictionary definition of being in actual contact; touching along a boundary or at a point. Adjacent has a dictionary definition of not distant; nearby; having a common endpoint or border.

There are no AMS properties in question that are considered to be on contiguous or adjacent property with the Buffalo Compression Facility.

The following table indicates the closest AMS facilities to the Buffalo Compression Facility:

Site	Facility Reference	SIC Code	Distance for Buffalo Compression Facility (CF)
Buffalo CF	Permit Applicant	1311	NA
Battle Run CF	Nearest AMS Site	1311	9 miles
Wilson Central Discharge Point (CDP)	Buffalo CF Delivery Point	1311	20 miles

The land between these sites is not owned or managed by AMS. The Buffalo Compression Facility will have the capability to gather gas from wells located over 13 miles away in an 86 square mile area. Operations separated by these distances do not meet the common sense notion of a plant. Therefore, the properties in question are not considered to be on contiguous or adjacent property.

3. Common control. The closest AMS controlled operation is located approximately 9 miles from the Buffalo Compression Facility. AMS is not under common ownership or control with any of the third parties who have facilities located near the facility.

Because the facilities are not considered to be on contiguous or adjacent properties the emissions from the Buffalo Compression Facility should not be aggregated with other facilities in determining major source or PSD status.

MONITORING OF OPERATIONS

AMS will be required to perform the following monitoring associated with this permit application:

1. Monitor and record quantity of natural gas consumed for all engines, and combustion sources.
2. Monitor the carbon canister media and replace when required.
3. Monitor opacity from all fuel burning units.
4. Monitor the tanks to ensure that all vapors are sent to the vapor recovery unit.
5. Monitor the condensate truck loading to ensure that all vapors are sent to the carbon canisters.
6. Monitor the glycol dehydration units to ensure the emissions are controlled by a condenser and the non-condensables are recycled to the flame zone of the reboiler.
7. Monitor all applicable requirements of 40CFR60 Subparts JJJJ and OOOO.

AMS will be required to perform the following recordkeeping associated with this modification application:

1. Maintain records of the amount of natural gas consumed in each combustion source.
2. Maintain records of testing conducted in accordance with the permit. Said records shall be maintained on-site or in a readily accessible off-site location
3. Maintain the corresponding records specified by the on-going monitoring requirements of and testing requirements of the permit.
4. Maintain records of the visible emission opacity tests conducted per the permit.
5. Maintain a record of all potential to emit (PTE) HAP calculations for the entire facility. These records shall include the natural gas compressor engines and ancillary equipment.
6. The records shall be maintained on site or in a readily available off-site location maintained by AMS for a period of five (5) years.

RECOMMENDATION TO DIRECTOR

The information provided in the permit application indicates that AMS meets all the requirements of applicable regulations. Therefore, impact on the surrounding area should be minimized and it is recommended that the Brooke County location should be granted a 45CSR13 construction permit for their facility.

Jerry Williams, P.E.
Engineer

Date